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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Applicant: Priem, Curtis R.

Patent Application

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Group Art Unit: 2672

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Examiner: Wang, Jin Cheng

For: APPARATUS AND METHOD FOR RENDERING CHARACTERS
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Appeal Brief



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Real Party in Interest

The assignee of the present invention is NVIDIA Corporation.

Related Appeals and Interferences

There are no related appeals or interferences known to the Appellant.

Status of Claims

Claims 1-54 are pending. Claims 1-54 are provisionally rejected under the judicially created doctrine of obviousness type double patenting. A timely filed Terminal Disclaimer has been filed to overcome the provisional rejection. Claims 1-54 are also rejected under 35 U.S.C. § 102(b). This appeal involves the 35 U.S.C. § 102(b) rejection of Claims 1-54.

Status of Amendments

An amendment has not been filed subsequent to the final rejection.

Summary of Invention

One embodiment of the present claimed invention pertains to a system for rendering fonts. In this embodiment, the system includes a first memory (450) that stores a data structure (451), where the data structure includes at least one font array (460). The system also includes a graphics controller (400) coupled to the first memory. The graphics controller accesses a font array included in the data structure. The graphics controller includes a second memory (414, 415, 416, 418, 420 and/or 421) that holds information read from the font array.

Another embodiment of the present claimed invention pertains to a method for rendering fonts. In this embodiment, a data structure (451) located in a first memory (450) is accessed. The data structure includes at least one font array (460). Information is read from a font array included in the data structure. The information read from the font array is placed in a second memory (414, 415, 416, 418, 420 and/or 421) resident on a graphics controller (400).

Yet another embodiment of the present claimed invention pertains to a system for rendering characters. The system includes a memory (450) and a graphics controller (400) coupled to the memory. The memory includes a data structure (451). The data structure includes glyph information for each of a plurality of characters. The data structure also includes size width information and size height information for each of the characters. Glyph information for a character to be rendered, the size width information, and the size height information are read from the data structure to registers (414, 415, 416, 418, 420 and/or 421) that reside on the graphics controller. The graphics controller uses the glyph information to render the character in a frame buffer based on the size width and size height information.

Issue

Whether Claims 1-54 are anticipated by Lobodzinski et al. ("Lobodzinski," US Patent Number 5,734,873) under 35 U.S.C. § 102(b).

Grouping of Claims

For each ground of rejection that applies to more than one claim, the claims do not stand or fall together. For purposes of appeal, the claims are grouped as follows:

Group 1: Claim 1

Group 2: Claim 2

Group 3: Claim 26

Group 4: Claim 27

Group 5: Claim 48

Group 6: Claim 49

Group 7: Claims 3-25, 28-47 and 50-54

Arguments

A. Scope and Content of the Cited Prior Art Reference (Lobodzinski)

With reference to Figure 2 of Lobodzinski, a display controller 30 is described. The display controller 30 includes a graphics engine 48. Display controller 30 also includes a frame buffer 56 coupled to but separate from the graphics engine 48. Frame buffer 56 includes character font information 62. Display controller 30 also includes register file 46 coupled to but separate from the graphics engine 48 and the frame buffer 56.

B. Differences Between Lobodzinski and the Claimed Invention

The following arguments apply to the claims of Groups 1-7.

Claim 1 recites that an embodiment of the present invention includes "a graphics controller coupled to the first memory, the graphics controller accessing

a font array included in the data structure, the graphics controller comprising a second memory for holding information read from the font array" (emphasis added). Claim 26 recites that an embodiment of the present invention pertains to a method that includes "placing the information read from the font array in a second memory resident on a graphics controller" (emphasis added). Claim 48 recites that an embodiment of the present invention pertains to a system "wherein glyph information for a character to be rendered, said size width information and said size height information are read to registers that reside on said graphics controller from said data structure" (emphasis added).

The Examiner has attempted to equate the graphics controller of the claimed invention to the graphics engine 48 of Lobodzinski. If the graphics engine 48 of Lobodzinski is interpreted as the graphics controller of the claimed invention, then the limitations recited in independent Claims 1, 26 and 48 are not shown or suggested by Lobodzinski. Assuming that the graphics engine 48 of Lobodzinski is the claimed graphics controller, then Lobodzinski does not show or suggest memory (and registers specifically) resident on a graphics controller. Attention is drawn to Figure 2 of Lobodzinski and the accompanying discussion. Neither these portions of Lobodzinski, nor Lobodzinski in its entirety, show or suggest that graphics engine 48 places information read from character font information 62 into memory resident on the graphics engine 48, because Lobodzinski only describes registers 46 that are not resident on the graphics engine. Thus, if the graphics engine 48 of Lobodzinski is assumed to be the claimed graphics controller, then there is no showing or suggestion that any of the registers referred to in Lobodzinski are resident on the graphics controller.

Lobodzinski, at column 4, lines 30-32, states "Registers associated with the text engine [52] are described below" (referring to Table 1 of Lobodzinski). The Examiner has attempted to equate the "second memory" of Claims 1 and 26, and the "memory" of Claim 48, to, for example, the set of registers within the text engine 52 of Lobodzinski. As discussed above, the registers of Lobodzinski are not resident on the graphics engine, in contrast to the claimed invention. The registers referred to by Lobodzinski can only be read as being the registers 46, which are not resident on the graphics engine 48.

As an alternative to the above interpretation, the Examiner has attempted to equate the graphics controller of the claimed invention to the display controller 30 of Lobodzinski. If the display controller 30 of Lobodzinski is interpreted as the graphics controller of the claimed invention, then the limitations recited in the claims are not shown or suggested by Lobodzinski. According to Claims 2, 27 and 49 dependent on independent Claims 1, 26 and 48, respectively, the "first memory" of Claims 1 and 26 and the "memory" of Claim 48 each can be embodied as a frame buffer (or a portion of a frame buffer). According to Claims 1, 26 and 48, read in light of Claims 2, 27 and 49, a frame buffer is coupled to the graphics controller of the claimed invention. Thus, if the display controller 30 of Lobodzinski is assumed to be the claimed graphics controller, then Lobodzinski does not show or suggest a graphics controller coupled to a frame buffer, as recited in Claims 1, 26 and 48 read in light of Claims 2, 27 and 49.

Furthermore, the display controller 30 of Lobodzinski is shown as including frame buffer 56. In contrast to Lobodzinski, the graphics controller of the claimed invention does not include a frame buffer. Thus, the display controller 30 of

Lobodzinski cannot be interpreted as the claimed graphics controller, because the display controller of Lobodzinski includes a frame buffer while the claimed graphics controller does not.

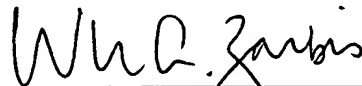
The Examiner has also attempted to equate the font array of the claimed invention with the array of index 412, font pointer 414 , font pitch 415, x 416, y 418, size width 420 and size height 421 of Figure 4 of the instant application. The font array recited in the claims is specifically "a font array included in the data structure." The phrase "font array included in the data structure," read in its entirety, refers to font arrays 460 and 462 of Figure 4 of the instant application, for example, and not to index 412, font pointer 414 , font pitch 415, x 416, y 418, size width 420 and size height 421.

Conclusions

Appellant believes that pending Claims 1-54 are patentable over Lobodzinski. Appellant respectfully requests that the rejection of these claims be reversed.

Respectfully submitted,

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Appendix - Clean Copy of Claims on Appeal

1. A system for rendering fonts, the system comprising:
a first memory having stored therein a data structure, the data structure including at least one font array; and
a graphics controller coupled to the first memory, the graphics controller accessing a font array included in the data structure, the graphics controller comprising a second memory for holding information read from the font array.
2. The system of claim 1 wherein the first memory comprises a frame buffer.
3. The system of claim 1 wherein the first memory comprises a system memory.
4. The system of claim 1 in which said at least one font array includes a plurality of characters.
5. The system of claim 4 in which each of the characters comprises one bit per pixel.
6. The system of claim 4 in which each of the characters comprises a plurality of bits per pixel.
7. The system of claim 1 in which said at least one font array comprises a plurality of font arrays.

8. The system of claim 7 in which each of the plurality of font arrays includes a plurality of characters.

9. The system of claim 8 wherein characters within different font arrays can be different sizes.

10. The system of claim 9 in which each of the characters comprises a bit per pixel.

11. The system of claim 9 in which each of the characters comprises a plurality of bits per pixel.

12. The system of claim 9 in which each of the characters includes size height information.

13. The system of claim 9 in which each of the characters includes size width information.

14. The system of claim 7 in which the graphics controller comprises: a set of registers for utilizing the information within the plurality of font arrays such that font characters can be efficiently retrieved and rendered.

15. The system of claim 14 in which the set of registers includes a font pointer register.

16. The system of claim 14 in which the set of registers includes a font pitch register.
17. The system of claim 14 in which the set of registers includes an index register.
18. The system of claim 14 which includes a horizontal information register.
19. The system of claim 14 which includes a vertical information register.
20. The system of claim 14 which includes a linear information register.
21. The system of claim 14 in which the set of registers further includes a glyph information register which holds character information retrieved by the graphics controller based upon the font pointer register.
22. The system of claim 14 in which the set of registers further includes a glyph information register which holds character information retrieved by the graphics controller based upon the font pitch register.
23. The system of claim 14 in which the set of registers further includes a glyph information register which holds character information retrieved by the graphics controller based upon the index register.

24. The system of claim 14 in which the set of registers includes a size width register.

25. The system of claim 14 in which the set of registers includes a size height register.

26. A method for rendering fonts, the method comprising:
accessing a data structure located in a first memory, the data structure including at least one font array;
reading information from a font array included in the data structure; and
placing the information read from the font array in a second memory resident on a graphics controller.

27. The method of claim 26 wherein the first memory comprises a frame buffer.

28. The method of claim 26 wherein the first memory comprises a system memory.

29. The method of claim 26 in which said at least one font array includes a plurality of characters.

30. The method of claim 29 in which each of the characters comprises one bit per pixel.

31. The method of claim 29 in which each of the characters comprises a plurality of bits per pixel.

32. The method of claim 26 in which said at least one font array comprises a plurality of font arrays.

33. The method of claim 32 in which each of the plurality of font arrays includes a plurality of characters.

34. The method of claim 33 wherein characters within different font arrays can be different sizes.

35. The method of claim 34 in which each of the characters comprises one bit per pixel.

36. The method of claim 34 in which each of the characters comprises a plurality of bits per pixel.

37. The method of claim 32 in which the graphics controller includes:
a set of registers for utilizing the information within the plurality of font arrays such that font characters can be efficiently retrieved and rendered.

38. The method of claim 37 in which the set of registers includes a font pointer register.

39. The method of claim 37 in which the set of registers includes a font pitch register.

40. The method of claim 37 in which the set of registers includes an index register.

41. The method of claim 37 which includes a horizontal information register.

42. The method of claim 37 which includes a vertical information register.

43. The method of claim 37 which includes a linear information register.

44. The method of claim 37 in which the set of registers further includes a glyph information register which holds information retrieved by a graphics controller based upon the font pitch register.

45. The method of claim 37 in which the set of registers further includes a glyph information register which holds information retrieved by a graphics controller based upon the index register.

46. The method of claim 37 in which the set of registers includes a size width register.

47. The method of claim 37 in which the set of registers includes a size height register.

48. A system for rendering characters, said system comprising:
a memory having stored therein a data structure, said data structure comprising glyph information for each of a plurality of characters, said data structure also comprising size width information and size height information for each of said characters; and
a graphics controller coupled to said memory;
wherein glyph information for a character to be rendered, said size width information and said size height information are read to registers that reside on said graphics controller from said data structure, said graphics controller using said glyph information to render said character in a frame buffer according to said size width and size height information.

49. The system of Claim 48 wherein said memory comprises a portion of said frame buffer.

50. The system of Claim 48 wherein said memory comprises a plurality of data structures, each of said data structures corresponding to a particular character font.

51. The system of Claim 48 wherein each of said characters in said data structure is identified by an index.

52. The system of Claim 51 wherein said graphics controller receives a value for said index.

53. The system of Claim 48 wherein said graphics controller receives a value that points to said data structure.

54. The system of Claim 48 wherein said graphics controller receives values for the horizontal and vertical locations in said frame buffer for rendering said character.